

THE additions to the Zoological Society's Gardens during the past week include two Macaque Monkeys (*Macacus cynomolgus*) from India, presented respectively by Mrs. Woods and Mrs. Sassoon; a Plantain Squirrel (*Sciurus plantani*) from Java, a Vulpine Phalanger (*Trichosurus vulpecula*) from Australia, presented by Mrs. A. Jeffrey; a Ground Hornbill (*Bucorvus abyssinicus*), a Bell's Cinixys (*Cinixys belliana*) from West Africa, presented by Mr. Henry Strachan; a Peregrine Falcon (*Falco peregrinus*), European, presented by Mr. W. R. Bryden; a Brazilian Tapir (*Tapirus americanus*), two Snowy Egrets (*Ardea candidissima*), six Ring-necked Lizards (*Tropidurus torquatus*), three Surinam Lizards (*Ameiva surinamensis*), a Lizard (*Crocodilurus lacertinus*), two Tuberculated Iguanas (*Iguana tuberculata*), six Giant Toads (*Bufo marinus*) from Para, presented by Captain A. Pam; a Vivacious Snake (*Tarbophis fallax*), European, presented by Mr. W. H. St. Quintin; a Spix's Macaw (*Cyanopsittacus spixi*) from Brazil, a Large Grieved Tortoise (*Podocnemis expansa*) from the Amazons, six Florida Tortoises (*Testudo polyphemus*) from North America, four Elegant Snakes (*Tropidonotus ordinatus infernalis*), four Couch's Snakes (*Tropidonotus ordinatus couchi*) from California, deposited; a Bristly Ground Squirrel (*Xerus setosus*) from South Africa, a Pink-headed Duck (*Rhodonessa caryophyllacea*) from India, purchased.

OUR ASTRONOMICAL COLUMN

EPHEMERIS FOR OBSERVATIONS OF EROS:—

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THE ROYAL PHOTOGRAPHIC SOCIETY'S EXHIBITION.

THE Royal Photographic Society hold their annual exhibition this year in the New Gallery, Regent Street, instead of, as heretofore, at the Water Colour Society's Gallery in Pall Mall. The result of the change to the larger galleries is certainly a matter for congratulation, because the very restricted accommodation of previous years crowded out professional and trade work, and gave very little space indeed for the exhibition of scientific and technical photography. This year, if any branch of photography is not represented, it is because of other difficulties than want of space. The only notable omission that occurs to us is that of cinematography, and this is accounted for by the very stringent regulations now enforced making a practical demonstration impossible.

The pictorial section occupies about as much of the walls as usual, and the greater part of the remaining space is taken up by professional and trade work, and apparatus exhibits, many of which, however, are not entirely devoid of scientific interest. But upstairs, in the gallery that runs round the central hall, there will be found a very excellent collection of "scientific, technical and photomechanical exhibits."

The Royal Observatory, Greenwich, contribute some of their most recent work with the 30-inch reflector, the 26-inch Thompson photographic refractor and other instruments. The photograph of the great nebula in Orion, taken last December, appears to be especially noteworthy. Two plates of the planet Eros are shown. A photograph of ξ Ursæ Majoris, taken with the 28-inch equatorial, the object-glass being corrected for photography by the separation of the lenses and reversal of the crown lens, as proposed by Sir G. G. Stokes, testifies to the value of this method of correction. Examples of work with the occulting shutter and several recent eclipse photographs will be

examined with interest. Among several other astronomical photographs may be mentioned a paper enlargement of very considerable dimensions of the transit of Venus in 1882, by Prof. David P. Todd, and a series of photographs by the Rev. John M. Bacon illustrating his balloon ascent to search for the Leonids last November.

There are several contributions of photomicrographs. As examples of skill in this direction, the series by Mr. E. M. Nelson, of diatoms, exhibited by the Royal Microscopical Society, will probably attract the most attention. The natural history and biological photographs of all kinds are too numerous to refer to in detail. As notable illustrations of the value of a series of photographs illustrating biological changes, the sixteen lantern slides, by Mr. Martin F. Woodward, from his photomicrographs, showing the fertilisation and segmentation of the egg of *Ascaris megaloccephala*, and a frame of photographs, by Mr. Edgar Scamell, showing the different stages in the growth of a nasturtium, will well repay careful study. The photographs in the latter series are so numerous that they would almost serve to illustrate the growth of the plant as a "living picture" by means of a cinematograph. It is very usual to slow down a rapid movement that its details may be recognised, and there is doubtless much to be learnt from the representation in a few seconds of changes that naturally require days or even weeks for their completion.

The applications of photography in many other directions are well illustrated. The automatic recording of the variations of scientific instruments, spectroscopic work, surveying, mining, engineering, the production of metal reliefs, are a few of the subjects that occur to us. Dr. W. J. Russell shows prints to illustrate the photographic activity of the radiations from "the metals radium and polonium," and also from uranium salts, which he finds do not lose any of their activity by keeping them for three years in the dark.

Photography itself, as distinguished from its applications, has received considerable attention, and we would point out that if exhibits of this character could be kept together in future exhibitions, it would much facilitate their study. A print from the enlargement (four thousand diameters), by Dr. Neuhaus, of a section of a film of a Lippmann interference photograph, copies of which have already been seen here, is exhibited by the doctor himself, and shows very clearly that the silver is deposited in layers, as the theory of the process indicates. Several examples of the Lippmann process may be seen in another part of the exhibition. An interesting demonstration of the possible range of exposure is given by the Kodak Company. They show seven negatives exposed under the same conditions, but for periods of from one to fifty, all of which were developed for the same length of time in the same developer. The longer the exposure the denser the negative, but the prints from them are scarcely distinguishable from one another. They show clearly that a small variation in exposure, or even none at all, will serve for very different subjects if negatives of various densities are not objected to.

Mr. Thomas Manly, the inventor of the "Ozotype" process of pigment printing, shows some examples of his method, one of which was exposed and washed thirteen months before the pigment was applied to it, proving that the power of the exposed bichromated paper to render gelatine insoluble and so fix the pigment does not sensibly change by keeping it. The process which in this country has hitherto been associated with Prof. Joly's name is illustrated by the Colour-photo Company of Chicago, and called the "McDonough-Joly process," referring to Mr. McDonough, who worked out the method in America simultaneously with Dr. Joly. They show that there is still room for improvement in the ruling of the triple coloured lines, and also in the nearer approximation of the photographic plate and the coloured screen. By looking at various angles across the ruling, the colour of the different parts of many of the pictures alternate between green, red and blue. This, we take it, is due to the distance between the colour screen and the photographic plate. Mr. Sanger Shepherd shows some striking examples of his triple film three-colour photographs.

The most notable novelty in apparatus is the "panoram kodak," for which the Kodak Company have been awarded a medal. All forms of projection have their advantages and their disadvantages. By adopting the cylindrical or panoramic perspective, many subjects are possible for photography that could not be rendered by the plane perspective given by the ordinary fixed lens and plate. The arrangements necessary for a rotating